**FINAL REPORT**

State: South Dakota Project No. T-26-R1

Project Title: **Wildlife Habitat Inventory on GPA's in Eastern South Dakota**

Period Covered: **July 1, 2005 through December 31, 2009**

Objectives:

To map, categorize, and make management recommendations for remaining tracts of native grassland and associated native habitats on state Game Production Areas (GPAs) in a 33 county area of eastern South Dakota (which constitutes "Regions 3 & 4" of the Wildlife Division) by 2009.

Accomplishments: This work has been contracted to a private firm "Sustained Horizons LLC" who, with the assistance of Region 4 GFP staff, reviewed aerial imagery and land management files for 13 counties in northeastern South Dakota, and selected 128 GPAs representing about 50,000 acres that appeared to contain native vegetation. Sustained Horizons staff then conducted field evaluations of each of these 128 GPAs. Utilizing soils maps, aerial imagery and GIS technology they have mapped polygons of upland vegetation, predominately prairie. Each polygon of native vegetation has been typed to "Ecological Site" vegetation as characterized by USDA's Natural Resources Conservation Service State Technical Guide. These characterizations can then be cross-walked to the National Vegetation Classification System. In addition, Sustained Horizon's field staff has assigned a qualitative value to each vegetation polygon as follows:

| Code | Vegetation Characteristics |
|---|---|
| 5: | Characteristic dominant plants, High diversity of native species, few exotic or invasive plants. |
| 4: | Native dominants and native forbs common but invaded by some exotics or invaders. |
| 3: | Native dominants and forbs still present but lots of cover dominated by exotics (or increasers like Juniper, Sumac, etc). Recovery is still possible. |
| 2: | Presumed native sod but now dominated by exotics or increasers – recovery will require long-term management and possible reintroduction of native plants. |
| 1: | May or may not be native sod. Dominated by exotics. Restoration requires cultivation or renovation. |

In addition to vegetative quality, each polygon received a landscape rating as follows:

| Code | Landscape Context |
|---|---|
| 3: | >60% of the surrounding landscape is native vegetation including CRP grassland. |
| 2: | >40% but <60% of the surrounding landscape native vegetation or CRP |
| 1: | <40% is native vegetation or grassland (>60% cropland). |

For each vegetation polygon, the contractors also made land management recommendations.

Sustained Horizons has completed the inventory for Region 4 and has entered the results into a GIS database that was delivered to GFP in February 2008. Results show that they mapped 249 polygons representing 17,962 acres of native grassland on the 50,000 acres of GPAs, or about 36% of the area surveyed. Grassland quality averaged quite low with most of these grasslands invaded by exotic plant species like smooth bromegrass and Kentucky bluegrass.

In 2008, Sustained Horizons began inventory of GPA's in Region 3. Together with GFP regional staff they selected 71 GPA's in 19 counties of southeastern South Dakota based upon GPAs with the largest grassland acreage. Region 3 has an existing GIS layer of GPA's with a coarse level vegetative cover layer, e.g. trees, crop, water, grass. One additional inventory component was added to this contract whereby Sustained Horizon's field staff quantitatively estimated the invasion into these grassland parcels of cedar (*Juniperus virginiana*) and other woody invaders.

Field work on Region 3 GPA's was conducted in 2008 with results received in Feb. 2009. Sustained Horizon's field staff rather than delineate discrete habitat polygons, instead simply characterized the existing grassland polygons provided by the regional staff. As a result, the data is not as useful as it was for Region 4. However, the addition of the woody invasion component does provide Region 3 land managers with a tool to help prioritize cedar removal and grassland restoration efforts. In broad terms, 20% of the Region 3 GPAs were found to have serious cedar invasion, 56% of the GPAs were found to have moderate amounts of cedar invasion, while 24% of the GPAs did not have a cedar invasion problem. The final product consists of a GIS layer of grassland polygons linked to an attribute table containing the polygon specific field characterization codes.

Figure 1 (next page) illustrates the type of map product produced for use by GFP land managers. Figure 2 illustrates a prescribed fire used to manage a piece of native grassland identified through this habitat inventory project. Figure 3 illustrates an attribute table associated with each of the map polygons for Region 3.

Anticipated Job Completion Date: December 31, 2009 (as amended).

Approved Cost: $130,000.00

Actual Cost: $130,000.00

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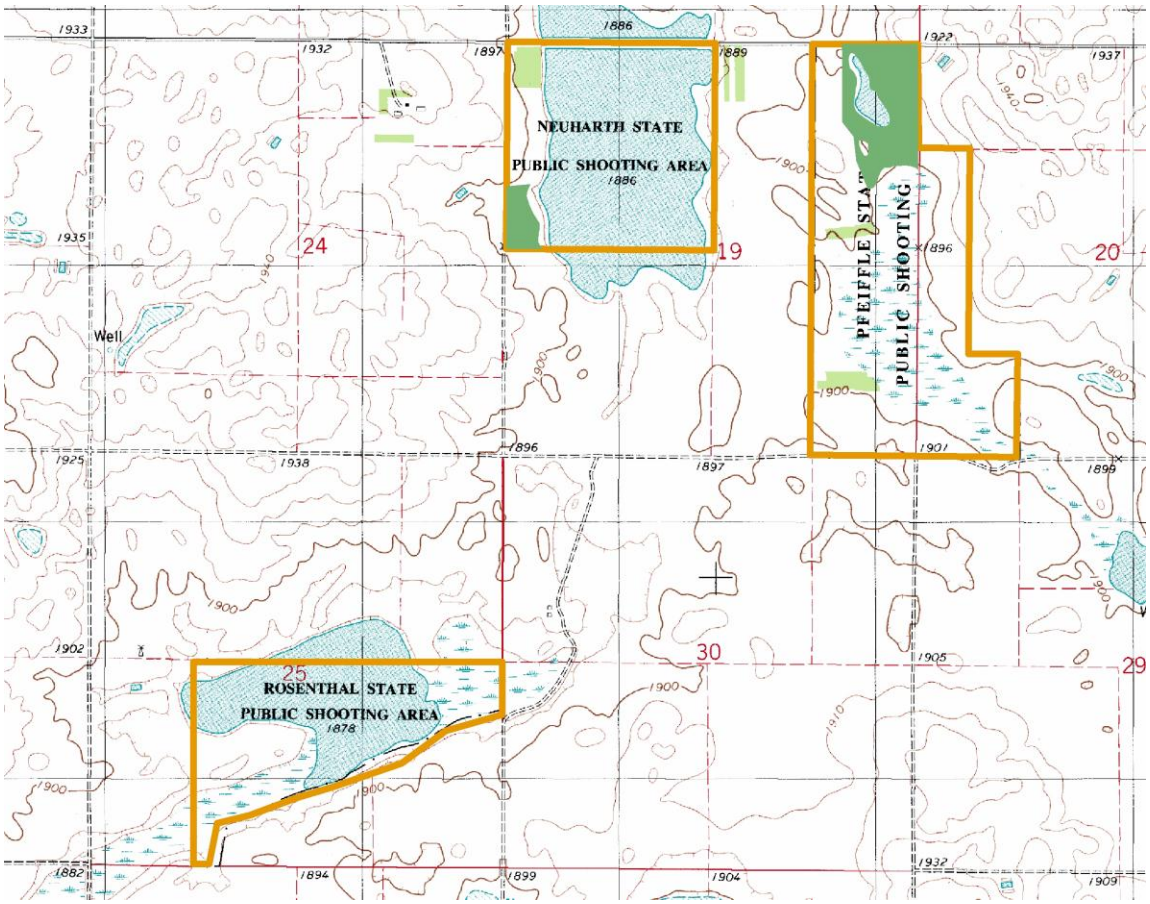


**Figure 1:** Example of mapping product from T-26-R1 project showing 3 Game Production Areas. The top two GPA's contain parcels of native grassland (shaded in dark green).

**Figure 2:** Prescribed burn on Mud Lake GPA, Deuel Co. SD to rejuvenate native tallgrass prairie and reduce invading cedars, resulting in part from wildlife habitat inventory project T-26-R1.

# Figure 3: Sample portion of Attribute table linked to native habitat polygons.

| County | GPA | Vegetation | Cond | Land-scape | Eco_Site | Mngt | Acres | Sec | Twn | Rng | Cedar Seed | Cedar Sapl | Cedar Tree |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aurora | Crystal Lake | CEGL002202 | 1 | 2 | Cp | 1 | 49.0 | 16 | 102N | 65W | | 0 | 0 |
| Aurora | Fish Lake | CEGL002202 | 1 | 3 | Lo | 1 | 100.0 | 15 | 103N | 63W | 1 | 1 | 1 |
| Aurora | Humphries Slough | CEGL002202 | 1 | 3 | SG | 1 | 77.0 | 27 | 104N | 66W | 0 | 0 | 1 |
| Aurora | Kramer Slough | CEGL002202 | 1 | 1 | Lo | 1 | 81.0 | 31 | 103N | 65W | 0 | 0 | 0 |
| Aurora | Pleasant Lake | CEGL002202 | 1 | 2 | Lo | 1 | 115.0 | 30 | 102N | 64W | 1 | 1 | 1 |
| Aurora | Wilmarth Lake | CEGL002202 | 3 | 1 | Lo | 1 | 124.0 | 36 | 105N | 65W | 1 | 1 | 1 |
| Beadle | Borden-Norwegian | CEGL002202 | 1 | 2 | Sy | 1 | 423.0 | 10 | 110N | 64W | 0 | 0 | 1 |
| Beadle | Brecken Slough | CEGL002202 | 1 | 1 | Lo | 1 | 71.0 | 18 | 111N | 64W | 0 | 1 | 1 |
| Beadle | Cavour Lake | CEGL002376 | 1 | 1 | Sy | 2 | 107.0 | 21 | 111N | 60W | 0 | 0 | 0 |
| Beadle | Lake Byron-Hogsback | CEGL002202 | 1 | 3 | TU | 1 | 60.0 | 25 | 113N | 61W | 0 | 1 | 1 |
| Beadle | Mud Lake | CEGL002202 | 1 | 2 | TU-Lo | 1 | 72.0 | 28 | 113N | 61W | 0 | 0 | 1 |
| Beadle | Pheasant Country | CEGL002202 | 1 | 2 | TU-Su | 1 | 83.0 | 3 | 113N | 62W | 0 | 1 | 1 |
| Beadle | Sand Creek | CEGL002202 | 1 | 1 | TU-Lo | 1 | 113.0 | 2 | 109N | 64W | 0 | 0 | 0 |
| Beadle | Staum Dam | CEGL002202 | 1 | 1 | Cl-TU | 2 | 93.0 | 14 | 113N | 59W | 0 | 1 | 1 |
| Bon Homme | Emilies Acres | CEGL002202 | 1 | 2 | Lo | 1 | 98.0 | 25 | 95N | 60W | 0 | 0 | 0 |
| Bon Homme | Lake Henry WAA | CEGL002202 | 1 | 2 | TU | 2 | 133.0 | 9 | 96N | 58W | 0 | 1 | 1 |
| Bon Homme | North Bon Homme | CEGL002202 | 1 | 2 | TU | 1 | 40.0 | 10 | 94N | 60W | 0 | 1 | 1 |
| Bon Homme | Snatch Creek | CEGL002202 | 1 | 1 | Tl-Ov | 1 | 49.0 | 15 | 95N | 59W | 0 | 0 | 1 |
| Bon Homme | Sorenson | CEGL002202 | 1 | 1 | Lo | 1 | 43.0 | 22 | 96N | 61W | 0 | 0 | 1 |
| Bon Homme | South Bon Homme | CEGL002202 | 1 | 1 | Lo-TU | 1 | 60.0 | 16 | 94N | 60W | 1 | 1 | 1 |
| Yankton | Clay Volin | CEGL002202 | 1 | 1 | SM | 1 | 94.0 | 26 | 94N | 54W | 0 | 1 | 1 |
| Yankton | Marindahl | CEGL002202 | 1 | 1 | TU | 1 | 173.0 | 18 | 95N | 54W | 0 | 1 | 1 |
| Brookings | Beck | CEGL002202 | 1 | 3 | Lo | 1 | 84.0 | 20 | 109N | 51W | 0 | 1 | 1 |
| Brookings | Cheevers Slough | CEGL002202 | 1 | 1 | Tl | 1 | 48.0 | 29 | 109N | 51W | 0 | 0 | 1 |
| Brookings | Kvermoe Slough | CEGL002202 | 1 | 1 | Lo-LS | 1 | 52.0 | 4 | 112N | 47W | 0 | 0 | 0 |
| Brookings | Moe Slough | CEGL002202 | 1 | 2 | Tl-Lo | 2 | 230.0 | 25 | 112N | 52W | 0 | 1 | 1 |
| Brookings | Oakwood Lake | CEGL002202 | 1 | 2 | Lo | 2 | 201.0 | 8 | 111N | 51W | 0 | 1 | 1 |